TECHNICAL EXHIBIT
APPLICATION FOR MODIFICATION OF
DTV CONSTRUCTION PERMIT
STATION KVIQ-DT
EUREKA, CALIFORNIA
CH 17 30 KW (MAX-DA) 550 M

## Technical Narrative

This Technical Exhibit supports an application for digital television (DTV) station KVIQ-DT which is paired with NTSC (analog) channel 6 at Eureka, California. This application requests a modification of its construction permit (CP) for a digital television operation on channel 17 at Eureka.[1] It is proposed by this modification, with respect to the current construction permit, to slightly modify the location of the transmitter site, change the antenna from a non-directional to directional and decrease the maximum effective radiated power.

## Proposed Facilities

Station KVIQ-DT proposes to operate DTV channel 17 from a new tower that will also support the KEET-DT, Eureka, California Channel 11 facility. It is proposed to operate with an Andrew ALP12L8-HSWR-17 directional type antenna with a maximum average effective radiated power of 30 kilowatts. The antenna height above average terrain for the channel 17 DTV operation will be 550 meters. The

[1] See FCC Construction Permit File Number: BPCDT-19991101AGH.

proposed KVIQ-DT effective radiated power does not exceed the Commission's allocated maximum effective radiated power of 1,000 kilowatts and is located within 3 kilometers of its DTV reference allotment geographic coordinates. Therefore, no allocation study is necessary for this "checklist" type application.

The proposed DTV transmitter site will be located on an existing tower located at (NAD-27):

40° 43′ 39″ North Latitude
123° 58′ 17″ West Longitude

A map of the transmitter site is provided in Figure 1. A sketch of antenna and pertinent elevations are included as Figure 2.

The Appendix contains the antenna manufacturer's horizontal and vertical plane radiation patterns for the proposed DTV antenna system.

Figure 3 is a map showing the DTV predicted coverage contour. The map provides the predicted F(50,90) noise limited contour. The extent of the contour has been calculated using the normal FCC prediction method. The Eureka city limits were derived from information contained in the 2000 U.S. Census of Population and Housing.

Radiofrequency Electromagnetic Field Exposure

The proposed KVIQ-DT facilities were evaluated in terms of potential radiofrequency electromagnetic field exposure at ground level to workers and the general public. The radiation center for the proposed KVIQ-DT antenna is

located 128 meters above ground level. The maximum effective radiated power is 30 kilowatts. A relative field value of 0.2 is assumed for the antenna's downward radiation. The calculated power density at a point 2 meters above ground level is 0.003 $mW/cm^2$. This is less than five percent of the Commission's recommended limit of 0.33 $mW/cm^2$ for channel 17 in an "uncontrolled" environment.

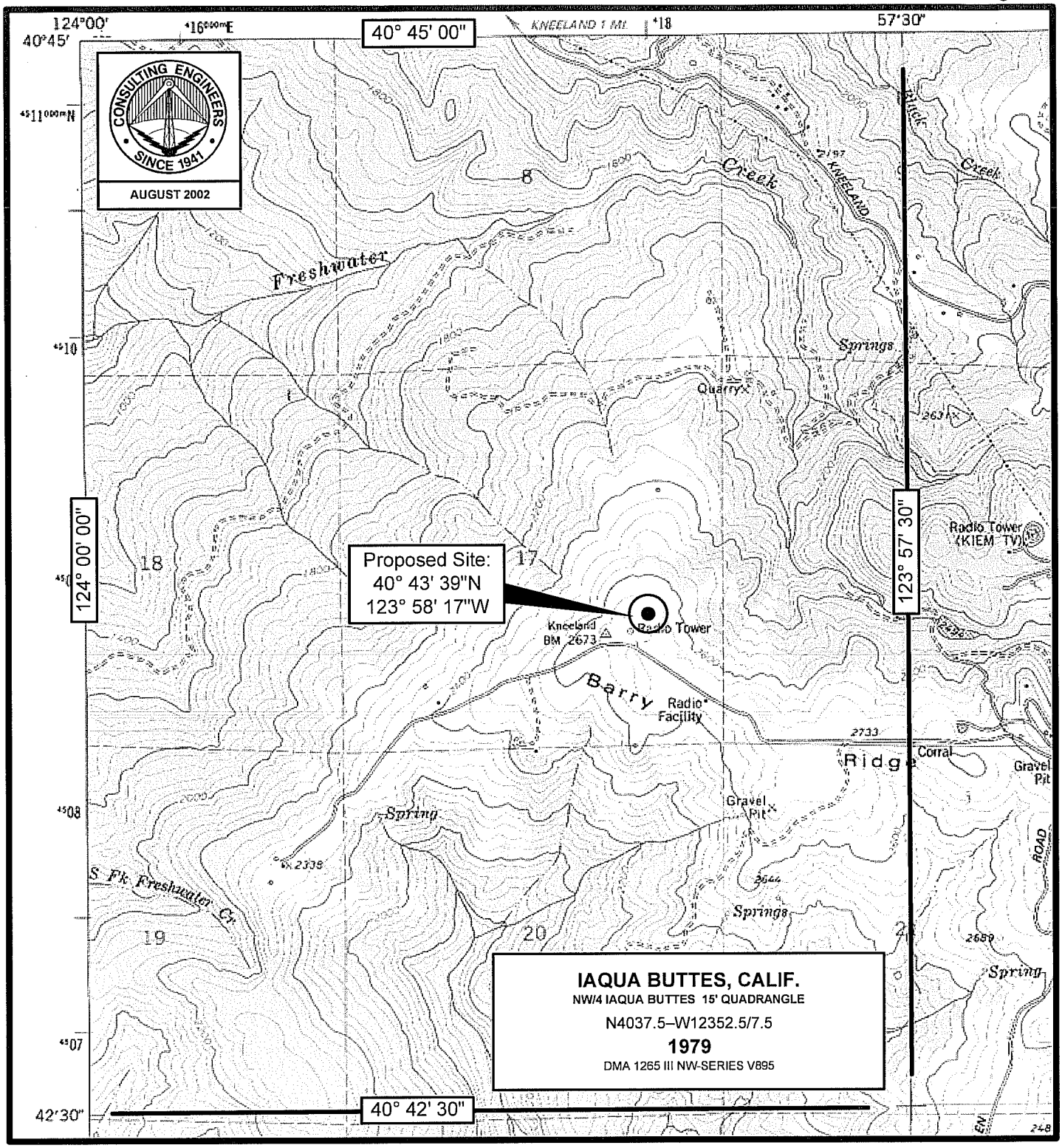
Access to the transmitting site will be restricted and appropriately marked with warning signs. As this is a multi-user site, an agreement will control access to the site. In the event that workers or other authorized personnel enter restricted areas or climb the tower, appropriate measures will be taken to assure worker safety with respect to radio frequency radiation exposure. Such measures include reducing the average exposure by spreading out the work over a longer period of time, wearing "accepted" RFR protective clothing and/or RFR exposure monitors or scheduling work when the stations are at reduced power or shut down.

Charles Cooper

du Treil, Lundin & Rackley, Inc.
201 Fletcher Avenue
Sarasota, Florida 324237
941.329.6000

September 11, 2002

Figure 1




1.0 0.5 0 1.0 miles

0.5 0 0.5 1.0 1.5 2.0 2.5 kilometers

# PROPOSED TRANSMITTER LOCATION

TELEVISION STATION KVIQ-DT
EUREKA, CALIFORNIA
CH 17 30 KW (MAX-DA) 521 M

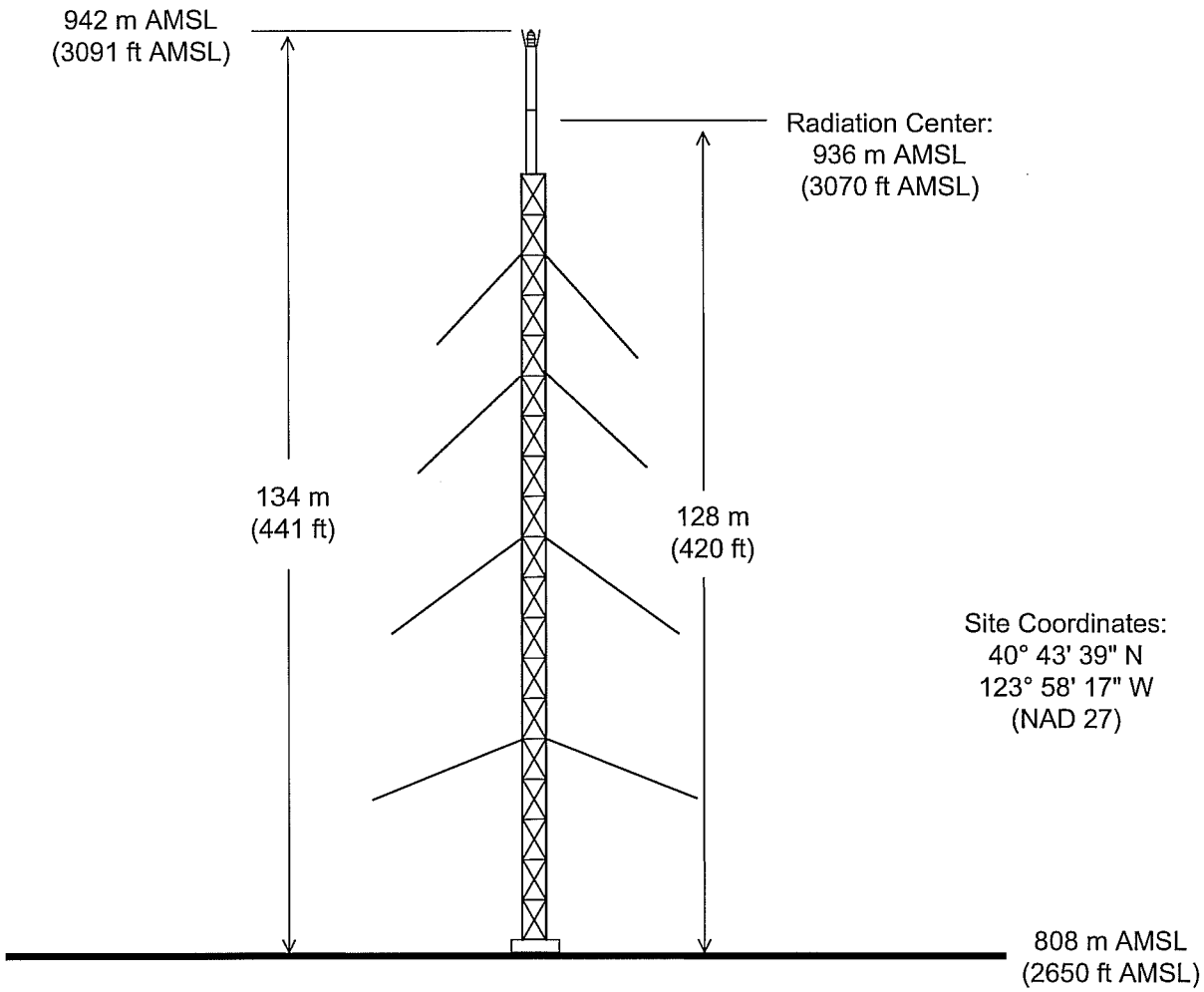
du Treil, Lundin & Rackley, Inc. Sarasota, Florida

Figure 2

Tower Reg. No. 1224088

CONSULTING ENGINEERS SINCE 1941

SEPTEMBER 2002



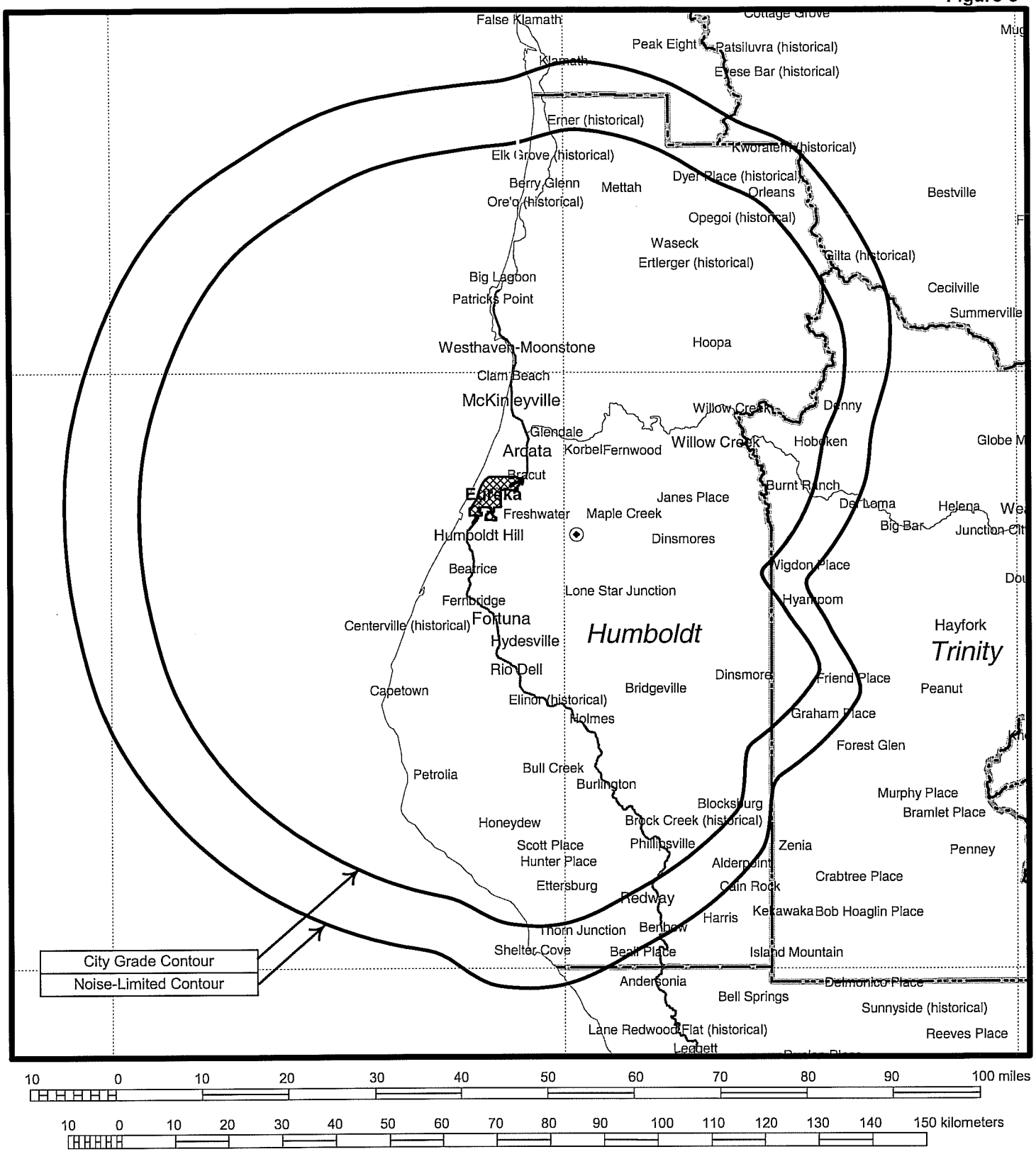

Not to Scale

# PROPOSED ANTENNA AND SUPPORTING STRUCTURE

TELEVISION STATION KVIQ-DT
EUREKA, CALIFORNIA
CH 17 30 KW (MAX-DA) 550 M

du Treil, Lundin & Rackley, Inc., Sarasota, Florida

Figure 3




# DTV COVERAGE CONTOURS

TELEVISION STATION KVIQ-DT
EUREKA, CALIFORNIA
CH 17 30 KW (MAX-DA) 550 M

du Treil, Lundin & Rackley, Inc., Sarasota, Florida

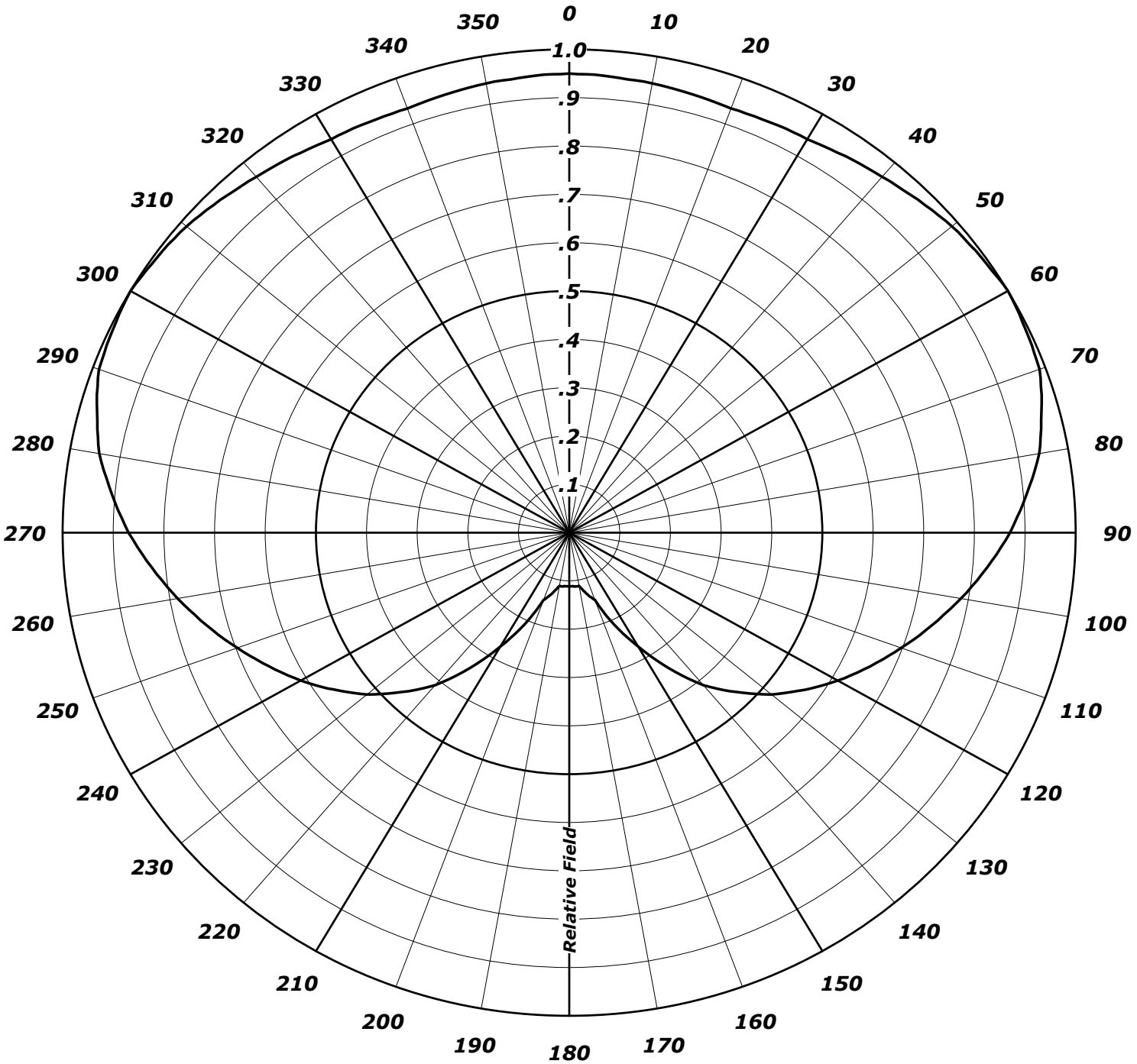
# APPENDIX

# MANUFACTURER TRANSMITTING ANTENNA SPECIFICATIONS

ANDREW

# AZIMUTH PATTERN

| | | |
|---|---|---|
| Type: | ALP-WR | |
| | Numeric | dBd |
| Directivity: | 1.69 | ( 2.28) |
| Peak(s) At: | | |
| Polarization: | | |
| Channel: | | |
| Location: | | |





ANDREW CORPORATION
10500 W. 153rd Street
Orland Park, Illinois U.S.A. 60462

ANDREW

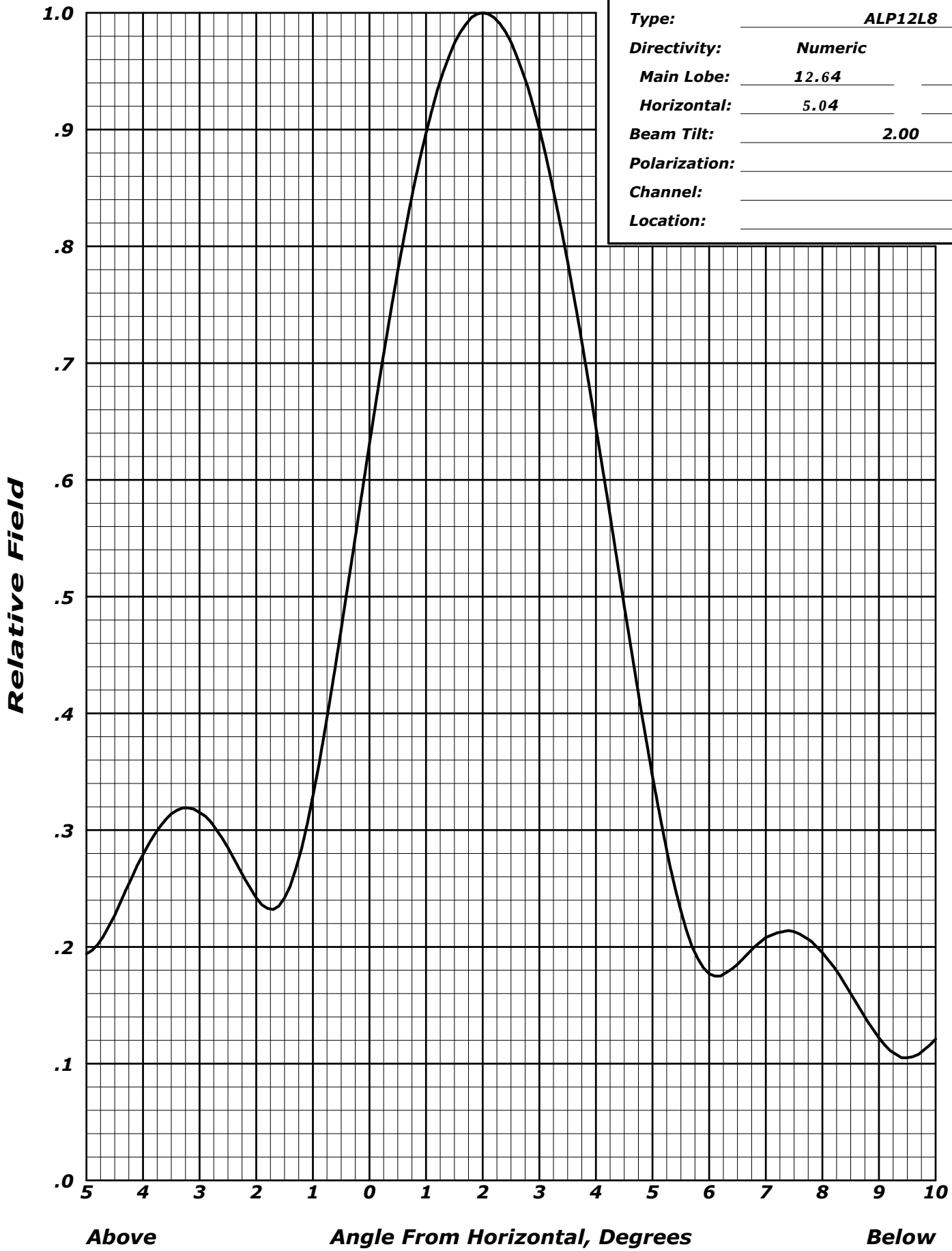
## TABULATED DATA FOR AZIMUTH PATTERN
## TYPE : ALP-WR

| Angle | Field | dB | Angle | Field | dB | Angle | Field | dB | Angle | Field | dB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.950 | -0.45 | 110 | 0.697 | -3.14 | 220 | 0.412 | -7.70 | 330 | 0.940 | -0.54 |
| 2 | 0.949 | -0.45 | 112 | 0.680 | -3.35 | 222 | 0.434 | -7.25 | 332 | 0.939 | -0.55 |
| 4 | 0.948 | -0.46 | 114 | 0.663 | -3.57 | 224 | 0.456 | -6.82 | 334 | 0.938 | -0.56 |
| 6 | 0.946 | -0.48 | 116 | 0.646 | -3.80 | 226 | 0.477 | -6.43 | 336 | 0.936 | -0.57 |
| 8 | 0.945 | -0.49 | 118 | 0.629 | -4.03 | 228 | 0.499 | -6.04 | 338 | 0.935 | -0.58 |
| 10 | 0.944 | -0.50 | 120 | 0.612 | -4.26 | 230 | 0.521 | -5.66 | 340 | 0.934 | -0.59 |
| 12 | 0.942 | -0.52 | 122 | 0.594 | -4.52 | 232 | 0.539 | -5.37 | 342 | 0.936 | -0.57 |
| 14 | 0.940 | -0.54 | 124 | 0.576 | -4.79 | 234 | 0.557 | -5.08 | 344 | 0.938 | -0.56 |
| 16 | 0.938 | -0.56 | 126 | 0.557 | -5.08 | 236 | 0.576 | -4.79 | 346 | 0.940 | -0.54 |
| 18 | 0.936 | -0.57 | 128 | 0.539 | -5.37 | 238 | 0.594 | -4.52 | 348 | 0.942 | -0.52 |
| 20 | 0.934 | -0.59 | 130 | 0.521 | -5.66 | 240 | 0.612 | -4.26 | 350 | 0.944 | -0.50 |
| 22 | 0.935 | -0.58 | 132 | 0.499 | -6.04 | 242 | 0.629 | -4.03 | 352 | 0.945 | -0.49 |
| 24 | 0.936 | -0.57 | 134 | 0.477 | -6.43 | 244 | 0.646 | -3.80 | 354 | 0.946 | -0.48 |
| 26 | 0.938 | -0.56 | 136 | 0.456 | -6.82 | 246 | 0.663 | -3.57 | 356 | 0.948 | -0.46 |
| 28 | 0.939 | -0.55 | 138 | 0.434 | -7.25 | 248 | 0.680 | -3.35 | 358 | 0.949 | -0.45 |
| 30 | 0.940 | -0.54 | 140 | 0.412 | -7.70 | 250 | 0.697 | -3.14 | 360 | 0.950 | -0.45 |
| 32 | 0.944 | -0.50 | 142 | 0.384 | -8.31 | 252 | 0.715 | -2.91 | | | |
| 34 | 0.948 | -0.46 | 144 | 0.356 | -8.97 | 254 | 0.732 | -2.71 | | | |
| 36 | 0.953 | -0.42 | 146 | 0.328 | -9.68 | 256 | 0.750 | -2.50 | | | |
| 38 | 0.957 | -0.38 | 148 | 0.300 | -10.46 | 258 | 0.767 | -2.30 | | | |
| 40 | 0.961 | -0.35 | 150 | 0.272 | -11.31 | 260 | 0.785 | -2.10 | | | |
| 42 | 0.966 | -0.30 | 152 | 0.247 | -12.15 | 262 | 0.802 | -1.92 | | | |
| 44 | 0.971 | -0.26 | 154 | 0.222 | -13.07 | 264 | 0.819 | -1.73 | | | |
| 46 | 0.976 | -0.21 | 156 | 0.198 | -14.07 | 266 | 0.836 | -1.56 | | | |
| 48 | 0.981 | -0.17 | 158 | 0.173 | -15.24 | 268 | 0.853 | -1.38 | | | |
| 50 | 0.986 | -0.12 | 160 | 0.148 | -16.59 | 270 | 0.870 | -1.21 | | | |
| 52 | 0.989 | -0.10 | 162 | 0.141 | -17.02 | 272 | 0.884 | -1.07 | | | |
| 54 | 0.992 | -0.07 | 164 | 0.134 | -17.46 | 274 | 0.899 | -0.92 | | | |
| 56 | 0.994 | -0.05 | 166 | 0.126 | -17.99 | 276 | 0.913 | -0.79 | | | |
| 58 | 0.997 | -0.03 | 168 | 0.119 | -18.49 | 278 | 0.928 | -0.65 | | | |
| 60 | 1.000 | 0.00 | 170 | 0.112 | -19.02 | 280 | 0.942 | -0.52 | | | |
| 62 | 0.998 | -0.02 | 172 | 0.112 | -19.02 | 282 | 0.951 | -0.44 | | | |
| 64 | 0.995 | -0.04 | 174 | 0.112 | -19.02 | 284 | 0.960 | -0.35 | | | |
| 66 | 0.993 | -0.06 | 176 | 0.111 | -19.09 | 286 | 0.970 | -0.26 | | | |
| 68 | 0.990 | -0.09 | 178 | 0.111 | -19.09 | 288 | 0.979 | -0.18 | | | |
| 70 | 0.988 | -0.10 | 180 | 0.111 | -19.09 | 290 | 0.988 | -0.10 | | | |
| 72 | 0.979 | -0.18 | 182 | 0.111 | -19.09 | 292 | 0.990 | -0.09 | | | |
| 74 | 0.970 | -0.26 | 184 | 0.111 | -19.09 | 294 | 0.993 | -0.06 | | | |
| 76 | 0.960 | -0.35 | 186 | 0.112 | -19.02 | 296 | 0.995 | -0.04 | | | |
| 78 | 0.951 | -0.44 | 188 | 0.112 | -19.02 | 298 | 0.998 | -0.02 | | | |
| 80 | 0.942 | -0.52 | 190 | 0.112 | -19.02 | 300 | 1.000 | 0.00 | | | |
| 82 | 0.928 | -0.65 | 192 | 0.119 | -18.49 | 302 | 0.997 | -0.03 | | | |
| 84 | 0.913 | -0.79 | 194 | 0.126 | -17.99 | 304 | 0.994 | -0.05 | | | |
| 86 | 0.899 | -0.92 | 196 | 0.134 | -17.46 | 306 | 0.992 | -0.07 | | | |
| 88 | 0.884 | -1.07 | 198 | 0.141 | -17.02 | 308 | 0.989 | -0.10 | | | |
| 90 | 0.870 | -1.21 | 200 | 0.148 | -16.59 | 310 | 0.986 | -0.12 | | | |
| 92 | 0.853 | -1.38 | 202 | 0.173 | -15.24 | 312 | 0.981 | -0.17 | | | |
| 94 | 0.836 | -1.56 | 204 | 0.198 | -14.07 | 314 | 0.976 | -0.21 | | | |
| 96 | 0.819 | -1.73 | 206 | 0.222 | -13.07 | 316 | 0.971 | -0.26 | | | |
| 98 | 0.802 | -1.92 | 208 | 0.247 | -12.15 | 318 | 0.966 | -0.30 | | | |
| 100 | 0.785 | -2.10 | 210 | 0.272 | -11.31 | 320 | 0.961 | -0.35 | | | |
| 102 | 0.767 | -2.30 | 212 | 0.300 | -10.46 | 322 | 0.957 | -0.38 | | | |
| 104 | 0.750 | -2.50 | 214 | 0.328 | -9.68 | 324 | 0.953 | -0.42 | | | |
| 106 | 0.732 | -2.71 | 216 | 0.356 | -8.97 | 326 | 0.948 | -0.46 | | | |
| 108 | 0.715 | -2.91 | 218 | 0.384 | -8.31 | 328 | 0.944 | -0.50 | | | |

ANDREW

# ELEVATION PATTERN

| | | |
|---|---|---|
| Type: | ALP12L8 | |
| Directivity: | Numeric | dBd |
| Main Lobe: | 12.64 | (11.02) |
| Horizontal: | 5.04 | ( 7.02) |
| Beam Tilt: | 2.00 | |
| Polarization: | | |
| Channel: | | |
| Location: | | |





ANDREW CORPORATION
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ANDREW

## TABULATED DATA FOR ELEVATION PATTERN

**TYPE : ALP12L8**

| Angle | Field | dB | Angle | Field | dB | Angle | Field | dB | Angle | Field | dB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| -5 To 10 | | | 10 To 90 | | | | | | | | |
| In 0.25 Increments | | | In 0.5 Increments | | | | | | | | |
| -5.00 | 0.194 | -14.24 | 8.75 | 0.140 | -17.08 | 35.00 | 0.089 | -21.01 | 62.50 | 0.079 | -22.05 |
| -4.75 | 0.206 | -13.74 | 9.00 | 0.122 | -18.27 | 35.50 | 0.115 | -18.79 | 63.00 | 0.086 | -21.31 |
| -4.50 | 0.227 | -12.88 | 9.25 | 0.109 | -19.21 | 36.00 | 0.141 | -17.02 | 63.50 | 0.091 | -20.82 |
| -4.25 | 0.254 | -11.90 | 9.50 | 0.105 | -19.58 | 36.50 | 0.163 | -15.76 | 64.00 | 0.095 | -20.45 |
| -4.00 | 0.279 | -11.09 | 9.75 | 0.110 | -19.17 | 37.00 | 0.181 | -14.85 | 64.50 | 0.096 | -20.35 |
| -3.75 | 0.299 | -10.47 | 10.00 | 0.121 | -18.34 | 37.50 | 0.193 | -14.29 | 65.00 | 0.095 | -20.45 |
| -3.50 | 0.314 | -10.06 | 10.50 | 0.152 | -16.36 | 38.00 | 0.198 | -14.07 | 65.50 | 0.093 | -20.63 |
| -3.25 | 0.319 | -9.92 | 11.00 | 0.176 | -15.09 | 38.50 | 0.195 | -14.20 | 66.00 | 0.088 | -21.11 |
| -3.00 | 0.315 | -10.03 | 11.50 | 0.185 | -14.66 | 39.00 | 0.186 | -14.61 | 66.50 | 0.083 | -21.62 |
| -2.75 | 0.303 | -10.36 | 12.00 | 0.177 | -15.04 | 39.50 | 0.170 | -15.39 | 67.00 | 0.077 | -22.27 |
| -2.50 | 0.285 | -10.90 | 12.50 | 0.153 | -16.31 | 40.00 | 0.150 | -16.48 | 67.50 | 0.071 | -22.97 |
| -2.25 | 0.262 | -11.62 | 13.00 | 0.118 | -18.56 | 40.50 | 0.126 | -17.99 | 68.00 | 0.066 | -23.61 |
| -2.00 | 0.242 | -12.32 | 13.50 | 0.076 | -22.38 | 41.00 | 0.101 | -19.91 | 68.50 | 0.063 | -24.01 |
| -1.75 | 0.233 | -12.67 | 14.00 | 0.035 | -29.12 | 41.50 | 0.077 | -22.27 | 69.00 | 0.062 | -24.15 |
| -1.50 | 0.242 | -12.32 | 14.50 | 0.001 | -60.00 | 42.00 | 0.057 | -24.88 | 69.50 | 0.065 | -23.74 |
| -1.25 | 0.276 | -11.20 | 15.00 | 0.028 | -31.06 | 42.50 | 0.042 | -27.54 | 70.00 | 0.070 | -23.10 |
| -1.00 | 0.329 | -9.66 | 15.50 | 0.044 | -27.13 | 43.00 | 0.035 | -29.12 | 70.50 | 0.077 | -22.27 |
| -0.75 | 0.397 | -8.04 | 16.00 | 0.048 | -26.38 | 43.50 | 0.035 | -29.12 | 71.00 | 0.086 | -21.31 |
| -0.50 | 0.472 | -6.52 | 16.50 | 0.044 | -27.13 | 44.00 | 0.036 | -28.87 | 71.50 | 0.095 | -20.45 |
| -0.25 | 0.551 | -5.18 | 17.00 | 0.038 | -28.40 | 44.50 | 0.037 | -28.64 | 72.00 | 0.103 | -19.74 |
| 0.00 | 0.631 | -4.00 | 17.50 | 0.042 | -27.54 | 45.00 | 0.035 | -29.12 | 72.50 | 0.112 | -19.02 |
| 0.25 | 0.707 | -3.01 | 18.00 | 0.054 | -25.35 | 45.50 | 0.031 | -30.17 | 73.00 | 0.120 | -18.42 |
| 0.50 | 0.779 | -2.17 | 18.50 | 0.068 | -23.35 | 46.00 | 0.025 | -32.04 | 73.50 | 0.127 | -17.92 |
| 0.75 | 0.843 | -1.48 | 19.00 | 0.076 | -22.38 | 46.50 | 0.018 | -34.89 | 74.00 | 0.133 | -17.52 |
| 1.00 | 0.897 | -0.94 | 19.50 | 0.077 | -22.27 | 47.00 | 0.012 | -38.42 | 74.50 | 0.138 | -17.20 |
| 1.25 | 0.941 | -0.52 | 20.00 | 0.070 | -23.10 | 47.50 | 0.008 | -41.94 | 75.00 | 0.142 | -16.95 |
| 1.50 | 0.974 | -0.23 | 20.50 | 0.060 | -24.44 | 48.00 | 0.004 | -47.96 | 75.50 | 0.145 | -16.77 |
| 1.75 | 0.993 | -0.06 | 21.00 | 0.060 | -24.44 | 48.50 | 0.001 | -60.00 | 76.00 | 0.147 | -16.65 |
| 2.00 | 1.000 | 0.00 | 21.50 | 0.079 | -22.05 | 49.00 | 0.005 | -46.02 | 76.50 | 0.148 | -16.59 |
| 2.25 | 0.994 | -0.06 | 22.00 | 0.109 | -19.25 | 49.50 | 0.013 | -37.72 | 77.00 | 0.148 | -16.59 |
| 2.50 | 0.975 | -0.22 | 22.50 | 0.142 | -16.95 | 50.00 | 0.024 | -32.40 | 77.50 | 0.148 | -16.59 |
| 2.75 | 0.943 | -0.51 | 23.00 | 0.171 | -15.34 | 50.50 | 0.038 | -28.40 | 78.00 | 0.146 | -16.71 |
| 3.00 | 0.901 | -0.91 | 23.50 | 0.191 | -14.38 | 51.00 | 0.054 | -25.35 | 78.50 | 0.143 | -16.89 |
| 3.25 | 0.847 | -1.44 | 24.00 | 0.202 | -13.89 | 51.50 | 0.072 | -22.85 | 79.00 | 0.140 | -17.08 |
| 3.50 | 0.787 | -2.08 | 24.50 | 0.202 | -13.89 | 52.00 | 0.091 | -20.82 | 79.50 | 0.136 | -17.33 |
| 3.75 | 0.719 | -2.87 | 25.00 | 0.191 | -14.38 | 52.50 | 0.109 | -19.25 | 80.00 | 0.132 | -17.59 |
| 4.00 | 0.645 | -3.81 | 25.50 | 0.172 | -15.29 | 53.00 | 0.127 | -17.92 | 80.50 | 0.127 | -17.92 |
| 4.25 | 0.570 | -4.89 | 26.00 | 0.146 | -16.71 | 53.50 | 0.142 | -16.95 | 81.00 | 0.122 | -18.27 |
| 4.50 | 0.492 | -6.16 | 26.50 | 0.116 | -18.71 | 54.00 | 0.155 | -16.19 | 81.50 | 0.116 | -18.71 |
| 4.75 | 0.417 | -7.60 | 27.00 | 0.087 | -21.21 | 54.50 | 0.165 | -15.65 | 82.00 | 0.110 | -19.17 |
| 5.00 | 0.346 | -9.22 | 27.50 | 0.059 | -24.58 | 55.00 | 0.171 | -15.34 | 82.50 | 0.104 | -19.66 |
| 5.25 | 0.283 | -10.96 | 28.00 | 0.037 | -28.64 | 55.50 | 0.173 | -15.24 | 83.00 | 0.098 | -20.18 |
| 5.50 | 0.231 | -12.73 | 28.50 | 0.020 | -33.98 | 56.00 | 0.172 | -15.29 | 83.50 | 0.091 | -20.82 |
| 5.75 | 0.195 | -14.20 | 29.00 | 0.010 | -40.00 | 56.50 | 0.166 | -15.60 | 84.00 | 0.084 | -21.51 |
| 6.00 | 0.177 | -15.04 | 29.50 | 0.005 | -46.02 | 57.00 | 0.157 | -16.08 | 84.50 | 0.078 | -22.16 |
| 6.25 | 0.177 | -15.07 | 30.00 | 0.001 | -60.00 | 57.50 | 0.145 | -16.77 | 85.00 | 0.071 | -22.97 |
| 6.50 | 0.185 | -14.66 | 30.50 | 0.006 | -44.44 | 58.00 | 0.131 | -17.65 | 85.50 | 0.064 | -23.88 |
| 6.75 | 0.197 | -14.09 | 31.00 | 0.013 | -37.72 | 58.50 | 0.115 | -18.79 | 86.00 | 0.057 | -24.88 |
| 7.00 | 0.208 | -13.64 | 31.50 | 0.019 | -34.42 | 59.00 | 0.100 | -20.00 | 86.50 | 0.050 | -26.02 |
| 7.25 | 0.213 | -13.45 | 32.00 | 0.023 | -32.77 | 59.50 | 0.085 | -21.41 | 87.00 | 0.043 | -27.33 |
| 7.50 | 0.213 | -13.43 | 32.50 | 0.025 | -32.04 | 60.00 | 0.072 | -22.85 | 87.50 | 0.035 | -29.12 |
| 7.75 | 0.207 | -13.70 | 33.00 | 0.025 | -32.04 | 60.50 | 0.065 | -23.74 | 88.00 | 0.028 | -31.06 |
| 8.00 | 0.195 | -14.20 | 33.50 | 0.030 | -30.46 | 61.00 | 0.063 | -24.01 | 88.50 | 0.021 | -33.56 |
| 8.25 | 0.180 | -14.92 | 34.00 | 0.043 | -27.33 | 61.50 | 0.066 | -23.61 | 89.00 | 0.014 | -37.08 |
| 8.50 | 0.160 | -15.92 | 34.50 | 0.064 | -23.88 | 62.00 | 0.072 | -22.85 | 89.50 | 0.007 | -43.10 |